Manager, Lake Andes NWR

Asst. Regl. Refuge Supvr., Twin Cities (RF)

Annual Water Program - 1972

The 1972 annual water program for the Lake Andes Refuge has been reviewed by the Regional Engineer and the Division of Wildlife Refuges. We approve this program and you may implement it.

J. C. Carlsen

Attachment
JCCarlsen:mc 2-24-72

Carly 724

Engineering

Regional Supervisor, Division of Wildlife Refuges

February 14, 1972

Regional Engineer, Minneapolis, Minneaota

EN-H-R-Lake Andes Annual Water Program

Lake Andes NWR - 1972 Annual Water Program

We have reviewed and concur in the subject program.

John D. Umberger

Attachment

cc: Refuges--RO

SCBrashears:ce

Signhian 215-72 Staplian 2-15-7





: Regional Director, Twin Cities, Minn.

January 18, 1972

FROM

:Refuge Manager, Lake Andes NWR

subject: Water management plan

Attached is the 1972 Water Management Plan for Lake Andes NWR.

Raeper 7 Fries

Ralph F. Fries

RFF/hc

Attachment



SUMMARY OF INFLOW AND OUTFLOW 1971 Lake Andes Refuge

	A. Ave. Annual Evap.	B. 1971 Lake Rise	C. Net Gain A&B	D. Surface acres	E. AC-ft Gain C&D	F. Outflow in ac-ft.	G. Total Inflow ac - ft E & F
Owens Bay	3 .1 5	+•55	3.70 [∠]	202	747	let end	747
North Unit	3.15	+.32	3.47	535	1856	(Prot Sant)	1856
Center Unit	3.15	+.52	3.67	1535	5633	dena (mm	5633
South Unit	3 .1 5	 68	2.47	<u>1500</u> 3772	3705 11941		370 <u>5</u> 1 1 941

Prairie Pond *25% of the well flow flowed into this area for 60 days, with the well flow at 750 gal/min., this would amount to 49.8 ac-ft.

1971 inflow - 11941 acre feet

1971 outflow - from the refuge (south unit) 0 ac-ft.

* 750 x 2 x 60 x 25 % = 49.8 1 17-

IMPOUNDMENT DATA

Pool: North Unit for Calendar year 1971

	07012					
HILNOW	FtMS1	Area (acres)	Capacity (acre-feet)	Elevation FtMSI	Area (acres)	Capacity
January	1433.98	9777	<u>o</u>			
February	1),33.08	7.1.1	200	1433.98	71/16	076
3		[1]	Atto	1433.98	1446	940
rarch	7435.85	550	1877	1435.85	Д Д О	7 000
April	1436.35	573	2163	11.26 (1		7,701
4	41.02.10	L .		140.004	586	2333
·	717-0517	5/6	2204	1436.50	579	2251
o Lie	1436.08	561	2004	1436.36	八ブル	01/0
Arric	1435.68	541	1787	1և35.86	Д IV	2005
August	1434.88	499	1368	1),35,3),	π ()	1000
September	1434.40	471	1139	1), 2), 70	5	1000
October	1434.10	1,51,	996	٠	1770	1291
November	11.2). 20			1434.50	465	1091
	1434.20	1,60	1043	1434.33	167	1105
December	1434.30	165	1091	11, 21, 20		

IMPOUNDMENT DATA

Pool: Center Unit for Calendar year 1971

	17. T.	MOMENTAL	1		LIMIT A V M	
MONTH	FtMSI	Area (acres)	Capacity (acre-feet)	Elevation FtMS7	Area	
January	11,29.11	1111	9977			(000 t - 0
February	3			1429.41	1441	2277
	11067711	171711	2277	1429.41	11111	2277
March	1429.41	11111	2277	1/129.71		1125
April	1430.14	1635	3):15	4 00 1	14444	2277
4	3		\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.	1430•440	1671	<u>4</u> 021
	1430.38	1662	3870	1430-42	1666	30].T
e	1430.06	1627	3264	7),30,35	1670	0/4/
July	1429.78	1558	2824	1),00 00	1039	3813
August	1),29,13	1375	* 0 \)	144217)	1000	3046
מפאווים לותי	3		7007	1429.59	1504	25 43
	1420.08	1275	1536	1429:08	1361	1890
Tagono	1428.70	1207	1334	1428.80	1251	11.1.6
November	1428.64	1181	1267	1)128.9).	2010	
	1428.94	1312		11.00 01	1012	1603

TWYOUNDMENT DATA

Pool: South Unit for Calendar year 1971
MINIMUM

	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				MAXIMUM	.55
HINON	FtMS1	Area (acres)	(acre-feet)	Elevation	Area	- 1
January	1),00 68	1 0 2				(dot 0_100)
	4100 /0			1427.00	1483	3791
repruary	1429.68	1483	3791	1429,68	14.83	3791
March	1430.40	1529	4874	1430.40	1529	և87և
April	1430.48	1533 (4997	1), 30, 65	17.5	ר, היים היים היים היים היים היים היים היי
5	11,20 E0	3 ())			1740	1626
	1450.59	1539	5165	1430.62	1540	5211
June	1430.29	1524	4706	1430.49	1534	5012
July	1430.00	1509	1261	1430.11	1515	90 بربرا
August	1429.22	11,415	3116	1429•71	1),85	N2017
September	1428.98	1424	2766	1),90,90	1)	
				14.07.0	7477	3233
October	1428.90	1411	2658	1429.00	1427	2793
November	1428.96	1416	2739	11,29.10	1),35	201.0
December	1429.00	1427	2793	1/129.00	1),97	0.700
	٠.				-	-177

Pool: Owens Bay Unit for Calendar year 1971

	a.	MOMITATION	IUM		MINIXAM	ta,
HINOM	FtMS1	Area (acres)	Capacity (acre-feet)	Elevation FtMS1	Area	
January	1440.10	197	334	1440.10	197	32),
February	1440.70	216	461	7 كىلىل، 70	916	1/4
5	11.1.0 50	23/				тоı
Malron	07.0441	216	191	1440.70	216	19 [†] (-
April	1440.56	212	+33	1 կկ0 • 7 կ	217	1.00
May	1440.58	213), W.T.	4110 (1	Manufact Annual Control	43)
	4-0			144,0004	214	844
la	47.07771	208	408	1440.55	212	կ29
July	1,440.30	204	376	1,11,10,10	207	397
August	1439.80	179	278	1440.17		3),0
September	1439.66	168	253	1L39.80	170	010
October	1)139,73	173))		-	1210
	1 100 00		205	1439.78	177	271
November	1439.97	192	308	26.0ئبل	202	368
December	1440.31	204	378	1),),0.65	7	1.7)

ANNUAL WATER MANAGEMENT PLAN, 1972 Lake Andes Refuge

A. GENERAL WATER USES

Lake Andes proper is divided into three management units by two dikes with control structures. The general flow of water is from the north unit to the south unit. The outlet for the lake is on the south side and flows to the Missouri River. A structure here enables the lake to be held at a maximum of 1437.25.

Owens Bay is seperated from the south unit of Lake Andes by a dike. A control structure in the dike permits us to control water levels in Owens Bay. An artesian well flows into Owens Bay and any excess water is discharged into the south unit of Lake Andes.

Approximately 25% of the flow from the artesian well is directed into Prairie Pond starting April 15th. This inundates low lands and increases pair and brood habitat on the refuge. The flow is stopped about the middle of June.

NORTH UNIT

The water level in this unit showed a net increase of .55 feet for the year. The unit was full in the spring but dropped considerably during the summer months.

Aquatic vegetation was similar to the previous year with good stands of sago pondweed, covering about 75% of the surface area.

Breeding pairs on the unit numbered twenty five. The number of broods observed was six.

Fall use by redheads and canvasbacks declined again this year. For the fall of 1970 peak use for canvasbacks was 1050, redheads 130 and this fall peak use for canvasbacks was 660, and redheads 50.

Many western grebes were observed on the unit throughout the summer. A nesting colony of western grebes was found this year with young being produced. The total population including young was estimated at 125.

Bullhead fishing was good on this unit.

CENTER UNIT

Water levels for this unit showed a net increase of .52 feet for the year.

The breeding pair count on this unit was 122 and the number of broods observed was 42.

This year emergents and sago pondweed were abundant covering about 85% of the surface area.

This unit was heavily used by fall migrants. An increase of snow and blue geese was noted this year; 6000 were using the center unit in the first week in November.

SOUTH UNIT

Water levels in this unit showed a net decrease of .68 feet for the year. This is the lowest level it has been within the last four years.

Sago pondweed covered about 70% of the surface area in this unit.

There were 163 breeding pairs and 32 broods observed on this unit.

OWENS BAY

Water levels in this unit showed a net increase of .55 feet for the year. Water levels in this unit stay fairly stable throughout the year due to the outflow of the artesian well. Any overflow from this unit enters the south unit.

Sago pondweed growth was very poor in this unit only covering about 20% of the surface area. Most of the submergents consist of coontail in this unit. The water in this unit remained clear throughout the summer.

This unit was also used heavily by the fall migrants.

About 25% of the water from the artesian well was again diverted into Prairie Pond for about 60 days starting April 15. We estimate 49.8 acrefect of water was diverted into Prairie Pond.

B. SUMMARY

Three units, Owens Bay, north unit and the center unit showed a net increase. The south unit showed a net decrease which was the lowest level within the last four years.

There is no evidence that any of the bullfrog tadpoles stocked in Owens Bay in the fall of 1970 reached maturity.

Bullhead fishing was good in the north and center units this spring.

C. RECOMMENDATIONS FOR WATER MANAGEMENT IN 1972

Since water levels of Lake Andes are maintained solely by natural runoff, no recommendations for water management can be made for the north, center or south units except for trying to maintain the units at the optimum level of 1436.75; this is .5 foot below the maximum outlet elevation of 1437.25. Due to local flooding complaints in high water years, this .5 foot buffer zone is desirable.

Owens Bay should be maintained as close as possible to the maximum of 1440.00.

The artesian well flow should be diverted into Prairie Pond starting April 15. Prairie Pond should be kept full until June 15 at which time all well flow into the area should be stopped and diverted into Owens Bay.

Ralph F. Fries.